SCIENCE & GOVERNMENT REPORT

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NIH Clan Cool to Califano Austerity Edict

In February 1977, Joe Califano drew cheers from a packed auditorium at the National Institutes of Health when he proclaimed the "depoliticizing" of the agency and offered in evidence the retention of Ford-appointee Donald Fredrickson as director of the multi-billion-dollar research complex (SGR Vol. VII, No. 3).

Califano was back on that same stage October 3, but this time there were no cheers for what he had to say. For the HEW Secretary, who is cutting a wide swath in Washington as the most fervent reorganizer in Mr. Carter's reorganization-bent Administration, has at last turned his attention to biomedical research. And, though the process he is employing is a model of openness and participation for any and all concerned, the biomedical research community is showing more than a little reluctance to jump on his bandwagon and commit itself to his prescribed goal of fiscal austerity and social utility.

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That, after all, is what the Secretary is aiming for as the ultimate product of the hurried timetable that he has decreed for establishing a new system of five-year planning for biomedical research. Since his appearance at Bethesda was a major waypoint on that timetable, let's look at what's going on in the politics of health research, because, if Califano has his way, they will be very different in the future. (Major excerpts from Califano's NIH address appear on Page 3).

From the day he took office 20 months ago, Califano, in words and action, has made clear his belief that the sprawling HEW empire must be taken apart and reassembled so as to make it efficiently responsive to its various mandates. For the first year or so, Califano concentrated on the messes he inherited in the government's big health-care programs, Medicare and Medicaid, and also fought a determined, though so far losing, battle to achieve some measure of control over hospital costs. Throughout these struggles, Califano acquired a reputation for ruthlessness in striving for his goals. Tutored in politics as an aide to Lyndon Johnson, he is widely regarded as the wiliest, toughest, and most determined member of the Carter cabinet, a 12-hour-a-day workaholic unaffected by any self-doubt, and never at all concerned about tender feelings in those around him. The clatter of rolling heads at HEW has become part of the background noise at that department.

Apart from proclaiming the "depoliticizing" of NIH, Califano had little to say about biomedical research, until last April, when he told a medical meeting that "We must shape a process that will produce a strengthened research enterprise which both pursues knowledge openly and freely, for its own sake, but also serves the health needs of the American people."

Implicit in this, of course, was the perception that, at present, we don't have such an enterprise — a view that conflicts sharply with innumerable assessments of the role of NIH and its linkage to health care. But, few, if any, within the biomedical research community took issue with the Secretary, who, in the course of that April talk, announced that he would initiate an elaborate process aimed at establishing "health-research principles." These, in turn, he said, would be used to write a detailed budget aimed at promoting basic research and making it usable for health care.

The "process," on which Califano puts great stress

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In Brief

Jimmy Carter has bad news for space addicts who are itching to get on with big new projects out there. In a talk October 1 at the Kennedy Space Center, Carter said: "I am often asked about space factories, solar power satellites, and other large-scale engineering projects in space. In my judgment it is too early to commit the nation to such projects." But, he added, "we will continue the evolving development of our technology, taking intermediate steps that will keep open possibilities for the future."

New York University's Graduate School of Public Administration has established a Center for Science and Technology Policy, with Herbert Fusfeld, director of research for Kennecott Copper, as its head.

Statisticians at the European Economic Community report that military R&D expenditures for the nine member countries dropped from 25 per cent to 22 per cent of their total R&D spending between 1970 and 1976. For Britain, however, the reported military total has been going up, and at 48 per cent, is on a par with the figure for the US.

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— apparently because it serves to legitimize the outcome — is indeed wondrously baroque, as can be seen from his description of it in the accompanying excerpt.

But, for our purposes, we now come down to October 3-4 at Bethesda, scene of a great assemblage of biomedical research people from all over, hundreds of whom had signed on to give "testimony" on health principles to five separate groups, labeled: Fundamental Research, Clinical Applications and Health Services Research, Health Regulation and Promotion, Research Capability, and Unifying Concepts.

What they were to testify on — for no more than five minutes each — was a set of windy "draft principles" suggested by 11 major research-related agencies within NIH, and whipped into form by a Steering Committee chaired by NIH Director Fredrickson. (The principles are, with occasional exception, sufficiently vague to accommodate most anything, e.g.: "the public should expect that . . . Resources for health research will be allocated so that public monies are spent wisely and the recipients are accountable for their use.")

In any case, Califano drew a very cool response with his keynote address; he then left, and the conferees went about the task of taking testimony for the purpose of developing draft responses to the Steering Committee's draft principles.

Following separate sessions that went into the night and through the morning of the next day, the assemblage reconvened in the main NIH auditorium. The scent of rebellion was in the air.

NIH Director Fredrickson somewhat sheepishly made some opening remarks about seeking to develop a "fabric" and ending up with some "patches." But, he insisted, he was encouraged. Then the heads of the five groups got up to report on their tentative conclusions.

First off was Robert Berliner, dean of the Yale School of Medicine, who chaired the group on Fundamental Research. The group, he said, "was not prepared to accept the premise of a closed, fixed ceiling on resources . . . We shared a belief that the value of fundamental research is so great . . . that a fixed total could not be accepted."

Similar remarks were made by the chairman of the group on Clinical Applications and Health Services Research, Paul Marks, vice president for health sciences at Columbia's College of Physicians and Surgeons. Marks said more basic research is needed, adding that "basic research should not be eroded to support clinical research."

And then came Leon Eisenberg, professor of psychiatry at Harvard, chairman of the group on Health Regulation and Promotion. Openly scornful of the proceedings, Eisenberg said, "I must express distress at this exercise," which, he said, had been allowed insufficient time for its serious task. And he warned that if funds are diverted in response to Califano's quest for a new biomedical research strategy, "they will be diverted from NIH and that will be a disaster." Eisenberg also said, "We do not accept the premise that resource limitations preclude the expansion of research spending." Cut down on reimbursement for needless surgery, he said, and there will be ample money for research.

The other group heads, William H. Danforth, chancellor of the University of Washington (Research Capability), and John A. Gronvall, dean of the University of Michigan Medical School (Unifying Concepts) were similarly opposed to the premise that research must accommodate itself to scarcity.

And that's how that phase of Califano's process came to a conclusion. The draft responses are now being refined; they will be published and made available for comment, and then — if the Secretary has his way — the end product will be enshrined as the basic charter for biomedical research spending by the US government.

Curiously, what's lacking in all this is any statement of agreement — or even an attempt to devise one — on what's wrong with the present setup for supporting biomedical research. Though not perfect, it is not indefensible.

Joe Califano ought to recognize that before he subjects the biomedical research enterprise to any more blows from his wrecker's ball. —DSG

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Califano: NIH Must Plan for Tight Budgets

Following are major excerpts from the address by HEW Secretary Joseph A. Califano Jr. to the National Conference on Health Research Principles, October 3 at the National Institutes of Health, Bethesda, Md.

●

. . . what you begin here today will help determine how we and others will apportion our research support over the next five years . . . I [earlier] suggested . . . that the government and the research community should embark jointly upon an important process, the development of a multi-year research strategy to guide the allocation of limited government health-research dollars. For even as President Carter moves to strengthen our national commitment to basic research, and hopefully, to improve our nation's research capability, we simply cannot ignore the reality of the limits of our resources — limits on the amount of basic research that the federal government can afford to finance, limits on the ability of research to help with some of the truly enormous health problems facing the nation, limits that will be with us, with you and with me, for the foreseeable future.

. . .in an era in which resources are limited, we must develop a better, more thoughtful, more intelligent strategy to guide the allocation of federal research dollars. A multi-year plan, covering at least five years, will serve to level out the annual appropriation fluctuations that make rational research planning so difficult.

I recognize that there's no way in the world of research that we can dot every i and cross every t, and that what's discovered tomorrow that none of us thought was there will have an enormous impact at various points on what happens to our dollars in the research area. And I recognize, therefore, that flexibility is necessary at all times. But I do want to emphasize four important benefits that I see from developing a multi-year strategy.

First, such a strategy can help us all, especially those of us in government, resist some of the inevitable but not always desirable pressures that attend distribution of substantial research dollars. You're all familiar with the kind of "diseases-of-the-month" pressure that attends the budget process within HEW and within the Congress.

Second, such a strategy can point directions that extend over a more extended and stable period than next year's budget cycle.

And, third, such a strategy should emphasize the relationship between health research and unmet health needs, and thus, I hope, may stimulate a creative interchange among the nation's laboratories, the health-care delivery system, and the regulatory process.

And, fourth, such a strategy should help us organize our research efforts so that they will bear some recognizable relationship to the nation's health needs.

If we are to benefit from the development of a five-year strategy or any sort of strategy, it must be as specific as possible. It must face up honestly and candidly to hard choices. Indeed, it must seek out and highlight those choices, not paper them over. To be useful, the plan cannot simply endorse generalized statements in support of research. To the extent possible, it must provide guideposts to indicate the type of research that should be supported. It must indicate the direction in which federal support for research should proceed . . . .

By the fall of 1979 I have asked that a full-scale five-year health-research budget be developed, a budget that attempts to spell out by agency and by general type of research the funding targets for research for the fiscal years 1982-1987 . . . . We intend to conduct this process with the fullest participation by the affected communities and by the public. We intend to seek advice and counsel from all quarters at every stage of the process, from the health-research community, from the health-care community and the medical profession, from the public, and, of course, from the members of the Congress . . . .

Based on this conference and on work that will follow close on its heels, we should adopt by early 1979 a set of basic principles that would underly a five-year research plan. The principles should set out the fundamental tenets of our research strategy, identifying the most important scientific and ethical considerations on which a research strategy should be based, as well as identifying potential criteria for choosing among various research priorities . . . . Based on the work of this conference, we intend to publish, sometime by the end of November, a tentative statement of principles. We will publish final principles early in 1979, only after carefully revising the principles in light of all the public comments we receive and the comments we receive from you . . . and in light of an intensive critique which we

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A Cautious Science Report from Jimmy Carter

The main theme that emerges in the debut edition of the annual *Science and Technology Report* of the President is that, in characteristic fashion, the Carter Administration feels uncertain and tends toward caution in regard to any decisive policy moves concerning science and technology.

The report, mandated in the 1976 act that re-established the old White House science office (under the label of the Office of Science and Technology Policy), is possibly one of the most doubt-ridden documents ever to emanate from the science-advisory apparatus. If it has the earmarks of an unwelcomed task, that's mainly because it was so unwelcomed in its original form as a Congressional assignment for the White House, that Mr. Carter — to the relief of his science adviser — transferred the assignment to the National Science Foundation. NSF, it turns out, wasn't especially keen for the job, but there it was, and here we have what purports to be the US Government's central statement on what's going on in science and technology policy matters, and what, if anything, it feels might be done to improve them.

The report itself is, by and large, enshrined in federal-turgidese, a camouflage form that protects the originators from being associated with any firm conclusions. But any puruser of innumerable addresses delivered over the past year or so by assorted eminences of the federal science establishment will find occasion for a incredulous gulp or two as the report winds its way through various issues that, at least from the podium, were heretofore addressed with verve and certainty.

For example, as we have often reported in these columns, the government's leadership of science has regularly sermonized from premises that hold that university research is suffering from a lack of money for new equipment and a lack of jobs for youngsters, whose careers are said to be blocked by a tenure-jam that dates back to big hirings in the boom days of the space era; furthermore, these same leaders have attributed various of the nation's economic troubles to industry's failure to keep pace with foreign competitors in investing in research and development.

In regard to academic research apparatus, what we're not told is that: "Although the obsolescence of university R&D equipment and instrumentation has been recognized by OMB (Office of Management and Budget) and by research funding agencies such as NSF, reliable data on the size and quality of the stock of R&D plant and equipment in universities and colleges is not available." To which it adds that "while the reported funding of R&D plant and equipment has dropped by about four-fifths since 1965, these figures do not include trends in funding equipment as a part of research grants" — which, it notes, often happens, but is not directly reported.

Concerning the much-lamented and highly publicized allegations of job shortages for young investigators, the report strongly suggests that maybe it doesn't exist. Thus, it states, "The evidence presented on academic employment of doctoral scientists and engineers suggests that financial pressures at universities have not yet prevented the addition of professional staff in science and engineering fields. An average growth of three per

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CALIFANO

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have asked the Institute of Medicine to conduct . . . .

The research goals is the second phase. During 1979, we will attempt to spell out specific research goals, based upon the principles finally adopted. The goals might very well address the specific research missions of present health agencies and would be intended to establish specific priorities and set specific policies for HEW's research agenda in health, and for the commitment of HEW's research dollars in this area.

During 1979, we will develop these goals by again seeking advice, publishing tentative goals, and then soliciting additional comments and criticism, with mid-1979 as our date . . . for completion.

Once specific health research goals have been identified, we will seek to translate them into a concrete five-year budget, which we will publish in the fall of 1979, so that at that point in time, you will know exactly what our thinking is for the next five years . . . .

I hope that you will focus on the hard questions, the questions of priority and choice for which there are no easy answers . . . Every one of us here is committed to longterm support for basic research. Every one of us believes in research to solve today's immediate and pressing health problems, but we must make choices. It is a hard fact but a reality that not every area of basic research, perhaps not even every promising one, can be explored at once or with equal energy and equal commitment of resources.

Similarly, as we move toward the applied research end of the spectrum, we must also be selective. We cannot do everything at once. Neither can we only propose new or greatly expanded initiatives requiring large increases in federal support. Rather, we must first make the best use of what we now have on hand, and to do this we will have to choose wisely and with foresight . . . .

. . . Second Thoughts on PhD Job Shortage?

cent has been reported annually since 1969. The age distributions of scientists and engineers in government and industry are quite similar to those in universities and colleges, which at least means that no one employment sector is getting a disproportionate share of experienced or inexperienced research personnel." And it also notes, "While some studies show that the proportions of new investigators on faculties have declined in the 1970s, others do not suggest faculty aging or bulges in the tenured and near-retirement age groups."

And, on the technological competitiveness of American industry, the report runs counter to most of the ominous warnings that our statesmen of science have been spouting for several years. Thus, it states: "Based on the data we do have, it seems fair to say that there has been little or no erosion in US technological capabilities. Neither the available economic nor technical indicators provide hard evidence of an eroding US technical position which can be tied to negative economic consequences. The US continues to gain strength in the commercial exploitation of technology. However, in specific technical fields, some foreign competitors likely will overtake the US and some will fall further behind. Overall, the US appears to be maintaining its scientific and technological advantage."

The report cautions, however, that the situation should be watched closely, and that increased investment in R&D may be warranted on the basis of "high private and social returns."

Finally, there's a section of the report, OSTP's own "Strategic Overview," that nicely illustrates our era's loss of confidence in science and technology's problem-solving powers. "The experience of recent decades," it states, "suggests that often too much has been expected of our scientific and technological breakthroughs. Consider the different expectations: antibiotics would wipe out disease; the atom would provide an endless source of energy; the green revolution would conquer world hunger. Failure of technology to meet our expectations is, in part, a reflection of the fact that each new advance serves not only to satisfy old needs, but also to create new needs almost simultaneously.

"The most significant thing we have learned may be that technological solutions are unlikely to be permanent or complete solutions. Antibiotics have curbed disease, but as they have helped in making inroads on the historic scourges of mankind's health, other diseases — cancer, cardiovascular diseases, diabetes — have moved to the forefront. The atom has provided a new and important source of energy, but at the possible cost of saddling future generations with the surveillance and safeguarding of nuclear waste. Each advance seems to generate new problems as it solves old ones. And in many cases, the new problems involve thorny institutional, cultural, or political dimensions that are difficult to resolve satisfactorily.

"We are coming to realize," the report continues, "that science and technology by themselves are often inadequate to insure enhanced social welfare . . . . "

Though true, this is, of course, extraordinary stuff to be coming from the political heirs of Vannevar Bush, whose *Science, The Endless Frontier* was a political tract in behalf of expanded government support for research. Realistic it may be. But what must be observed now is that the politics of science has indeed taken a curious turn. All along we were warned that, as Eisenhower put it, public policy was enroute to being taken over by scientific and technological elites. What the elites are now telling the politicians is that too much was expected of science and technology. —DSG

(A limited number of copies of *Science and Technology: Annual Report to the Congress, August 1978* are available without charge from: The National Science Foundation, Public Information Branch, 1800 G St. Nw., Washington, DC 20550. Copies will be available later from the US Government Printing Office.)

Research Commission Formed

With endorsements from points as disparate as Senator William (Golden Fleece) Proxmire and Frank Press, the President's science adviser, six research-related organizations have established a National Commission on Research "to propose changes in how the federal government supports academic research."

The Commission may well be just another entry in the crowded field of federal clients who seek to simplify the process of getting more out of the federal treasury. But this one is rather well situated, being the offspring of the Association of American Universities, the National Academy of Sciences, the American Council on Education, the National Association of Land Grant Universities and Colleges, the Social Science Research Council, and the Council of Learned Societies.

The Commission, which expects to wind up its business in about one year, will operate independently of its founding agencies, with William H. Sewell, professor of sociology, University of Wisconsin, as chairman, and Cornelius J. Pings, of Caltech, as director.

IRS Rulings Bewilder the Non-Profits

Tax-status jitters are rapidly spreading through many of the nation's tax-exempt organizations, including major scientific societies, as the result of a number of conflicting rulings by the Internal Revenue Service.

And, depending on whom you talk to — and when — the IRS is either confused about its policies on tax-exempt organizations or is systematically trying to curtail their activities.

The latest source of alarm is in a number of rulings by IRS agents that seem to signal a radical departure from the government's heretofore laissez faire attitude toward non-profit organizations.

This summer, for example, the IRS issued a ruling that would have had a serious impact on many of the magazines and newsletters published by the associations by barring all tax-exempt organizations from publicizing the views of public officials and candidates.

Following protests from many non-profit groups, the IRS canceled its rule a month later. Once again tax-exempt groups were permitted to provide certain voter-education services. The IRS warned, however, that all of their politically related activities would be reviewed, on a case-by-case basis. Moreover, the IRS said it would probably not look favorably on such common practices as the use of editorial comments alongside Congressional voting records and the publication of voting records on any single issue — say, support for scientific research.

This past spring, six even more controversial rulings were issued by IRS agents in the New York and Washington district offices, challenging the very status of some of the nation's leading professional organizations: The American Society of Mechanical Engineers, the American Society of Civil Engineers, the American Institute of Chemical Engineers, the American Institute of Physics, the American Physical Society, and, largest of them all, the American Chemical Society.

Following routine tax audits, the IRS agents said that each association was carrying out what they considered to be illegal activities.

Yet most of what the IRS district offices challenged were activities the organizations had been carrying out for 50 years or more, including such common practices as selling identification badges and providing magazine subscriptions at lower rates to members than to non-members.

Several of the societies were also told that because their journals and programs were too technical for the general public to enjoy, they could not be considered educational in nature. If such programs could not benefit the general public, the IRS said, then they are "inuring" to the benefit of individuals — something that is strictly forbidden under regulations affecting tax-exempt organizations.

From one educator, this drew the observation: "A Harvard education cannot benefit the 'general public.' Yet you don't see the IRS challenging Harvard's tax status. The whole notion is a bunch of bunk."

Nonetheless, the agents in New York and Washington decided that the groups, which had been classified under Section 501 c 3 of the Internal Revenue Code as tax-exempt educational organizations, should be reclassified under Section 501 c 6 as business or professional leagues. The change could have serious financial consequences since unlike educational organizations, business leagues do not qualify for any of a number of local tax and postal privileges. Moreover, they cannot accept charitable, tax-free contributions.

Following a rash of appeals and some pandemonium in the scientific community, the IRS North Atlantic regional office, in Baltimore, issued another ruling last month, reversing the New York district office's ruling on the American Physical Society.

While not commenting on the status of any of the other scientific associations (all of which have appealed their cases), the regional office in Baltimore agreed with the American Physical Society that its activities were "truly scientific and educational in nature." The Physical Society, according to the Baltimore office, could keep its highly valued 501 c 3 status.

Contradicting what the district office had said, the regional office acknowleged that at least some of the challenged activities — including selling tie tacks and label buttons to its members — represented only a minuscule part (1.6 per cent) of the organization's gross expenditures each year.

"The result," says Joseph A. Burton, treasurer of the society, "is that IRS agreed that none of the activities in any substantial way interferes with our overall mission as a scientific organization."

The Baltimore office also agreed with the American Physical Society's arguments about the nature of its membership. Physicists, the society argued, are scientists and therefore members of "scientific" organizations, not professionals who are members of business groups.

That would seem to be good news, not only for the Physical Society, but also for the chemical and engineering groups. But given IRS's past record, it is not certain whether the service will actually conclude that chemists and engineers are also scientists.

What has the science groups especially worried is that even the more lenient Baltimore office has apparently concluded that teachers should be considered "professionals," which in this context is a dubious honor. If

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. . . And New Tax Office is Just Starting Up

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logic has its way, the IRS may well decide to classify organizations of teachers in the professional or business league category. What is not clear is what the IRS will do with organizations whose members are both researchers and teachers.

Earlier this summer, a Washington IRS official who insisted on anonymity said that the district rulings in New York and Washington "could well be" part of an overall "crackdown" on all tax-exempt groups. In fact, the official said, "all tax-exempt organizations can expect to be brought under greater scrutiny in the future."

The only reason it hasn't happened before, he added, is that the efforts of IRS's new tax-exempt office are only "just beginning to get rolling." In other words, the office is now fully staffed and ready to begin the work that Congress authorized when it set up the separate office in 1974.

When the more lenient rulings came through later in the summer, however, the same official would not comment even off the record on how the new decisions fit into the overall "crackdown," if, indeed, one actually exists.

Officials of some of the New York and Washington tax-exempt organizations have been understandably troubled and some of them have even begun to revise their original theories that the negative rulings were largely the work of an "over-zealous" IRS field agent.

"One day I think the agent who audited us simply didn't know what he was doing," said a lawyer for one of the New York associations. "The next day I think it's all a part of an overall plot to destroy the very concept of a tax-exempt organization.

"What I would most like to see happen right now," he said "is for someone to clarify just what it is that we're up against." —Anne Roark

(The author is an assistant editor of the *Chronicle of Higher Education.*)

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Pre-publication orders, at a substantially reduced price, are now being accepted for the new edition of SGR International Almanac. Following upon the first edition, which was published last year, the forthcoming volume will consist of original review articles on science-policy developments in all the industrialized and major developing countries, plus the texts of major science-policy documents issued over the past year. Written by leading science-policy specialists from over 20 countries, SGR International Almanac has won wide acclaim as a standard text in its field.

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Britain Doubts Case for Aerosol Spray Ban

The manufacturers of aerosol spray cans in Britain are fighting hard to prevent the European Economic Community from imposing restrictions on the use of chlorofluorocarbons (CFCs) as propellants. The aerosol makers fear that the EEC will succumb to pressure from the US and ban the use of CFCs in non-essential products.

Britain's manufacturers recently issued a report questioning the scientific basis of the bans imposed by the US and Sweden. The British Aerosol Manufacturers' Association (BAMA) thus joins the Royal Society, the Clean Air Council, and the Royal Commission on Environmental Pollution, all of which have said that the evidence linking CFCs with a diminution of the ozone concentration in the Earth's upper atmosphere is too tenuous to warrant any immediate action.

The BAMA points to a recent paper in *Nature* which concludes that, if anything, the Earth's ozone concentration is rising, possibly because of man's production of carbon dioxide, and states: "It is the opinion of BAMA that the scientific evidence at the end of 1978 is unlikely to be sufficiently clear-cut to make an unequivocal scientific judgment. BAMA believes that the evidence to date shows that there is no hazard in waiting for more definite scientific conclusions, nor any reason to restrict manufacturers' choice of propellants."

BAMA prepared its report at the request of Britain's Department of the Environment, which wanted an assessment of alternative propellants. According to the report, work by the manufacturers has shown that alternative propellants could be used for any aerosol made in the UK, 70 per cent of which employ CFCs. "However, evidence on the acceptability to the consumer of these alternative formulations is only partial, and there would need to be a more extended period of development and consumer testing before they could be widely adopted." The industry also points out that other propellants have health and safety problems that CFCs do not share.

With just two makers of CFCs in the UK, and a retail market of nearly $400 million for finished products, it is easy to see why the industry wants to prevent hasty action. It seems to have won this battle, but it now has to convince the department to put up a strong fight against the EEC imposing any restrictions on CFCs.

If Europe and other large markets for CFC aerosols do not implement either a ban on their use or severe restrictions, the US's own constraints will be irrelevant — while the use may be national, the impacts of the pollution are global — hence the European manufacturers fear that the US will put heavy pressure on the EEC to intervene to control the use of CFCs. There is, therefore, some natural sniping at the US's stand, which is criticized as being a purely political one with little scientific justification. Since the aerosol industry is hardly crucial to the US economy, according to one popular view here, it was subjected to controls while other polluters whose impacts on the environment are much more obvious and damaging have been left alone because to have hit them would have had a more dramatic economic impact. —MK

Report of the British Aerosol Manufacturers' Association on Aerosol Propellants is available from BAMA at: Alembic House, 93 Albert Embankment, London, SE1 7TU, England.

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